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Dnmt3a Antibody

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP1034a

Product Information

Application	WB, IHC-P, E
Primary Accession	Q9Y6K1
Other Accession	Q1LZ53, O88508, Q4W5Z4
Reactivity	Human, Mouse, Rat
Predicted	Mouse, Rat, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	101858
Antigen Region	457-486

Additional Information

Gene ID	1788
Other Names	DNA (cytosine-5)-methyltransferase 3A, Dnmt3a, DNA methyltransferase HsaIIIA, DNA MTase HsaIIIA, MHsaIIIA, DNMT3A
Target/Specificity	This Dnmt3a antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 457-486 amino acids from human Dnmt3a.
Dilution	WB~~1:2000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Dnmt3a Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	DNMT3A
Function	Required for genome-wide de novo methylation and is essential for the establishment of DNA methylation patterns during development (PubMed:12138111, PubMed:16357870, PubMed:30478443). DNA methylation

	is coordinated with methylation of histones (PubMed:12138111, PubMed:16357870, PubMed:30478443). It modifies DNA in a non-processive manner and also methylates non-CpG sites (PubMed:12138111, PubMed:16357870, PubMed:30478443). May preferentially methylate DNA linker between 2 nucleosomal cores and is inhibited by histone H1 (By similarity). Plays a role in paternal and maternal imprinting (By similarity). Required for methylation of most imprinted loci in germ cells (By similarity). Acts as a transcriptional corepressor for ZBTB18 (By similarity). Recruited to trimethylated 'Lys-36' of histone H3 (H3K36me3) sites (By similarity). Can actively repress transcription through the recruitment of HDAC activity (By similarity). Also has weak auto-methylation activity on Cys-710 in absence of DNA (By similarity).
Cellular Location	Nucleus. Chromosome Cytoplasm. Note=Accumulates in the major satellite repeats at pericentric heterochromatin {ECO:0000250|UniProtKB:O88508}
Tissue Location	Highly expressed in fetal tissues, skeletal muscle, heart, peripheral blood mononuclear cells, kidney, and at lower levels in placenta, brain, liver, colon, spleen, small intestine and lung

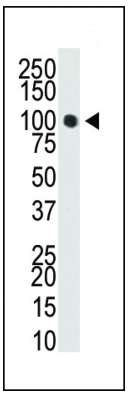
Background

CpG methylation is an epigenetic modification that is important for embryonic development, imprinting, and X-chromosome inactivation. Studies in mice have demonstrated that DNA methylation is required for mammalian development. Dnmt3a is a DNA methyltransferase that is thought to function in de novo methylation, rather than maintenance methylation. The protein localizes to the cytoplasm and nucleus and its expression is developmentally regulated.

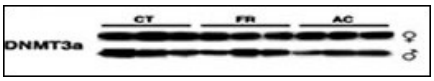
References

Xie, S., et al., Gene 236(1):87-95 (1999). Robertson, K.D., et al., Nucleic Acids Res. 27(11):2291-2298 (1999).

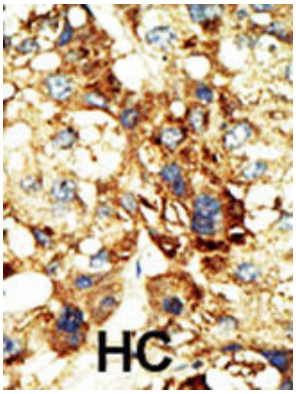
Images



Western blot analysis of anti-Dnmt3a Pab (Cat. #AP1034a) in T47-D cell lysate. Dnmt3a (Arrow) was detected using purified Pab. Secondary HRP-anti-rabbit was used for signal visualization with chemiluminescence.



Lysates from thymus tissue after radiation were subjected to WB using antibody against DNMT3a. CT, control animals; FR, animals subjected to fractionated exposure; AC, acutely exposed animals. All sample loading was normalized to protein content. Representative Western blots from three independent experiments are shown; each lane represents a protein extract of a thymus of one animal. (Mol. Cancer Res. 2005 Oct 01;3(10):553-561)



Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.

Citations

- DNA methylation and regulation of DNA methyltransferases in a freeze tolerant vertebrate.
- Variants of cause transcript-specific DNA methylation patterns and affect hematopoiesis
- Glucocorticoid-induced S-adenosylmethionine enhances the interferon signaling pathway by restoring STAT1 protein methylation in hepatitis B virus-infected cells.
- Hiwi mediated tumorigenesis is associated with DNA hypermethylation.
- Sex-specific radiation-induced microRNAome responses in the hippocampus, cerebellum and frontal cortex in a mouse model.
- OxLDL up-regulates microRNA-29b, leading to epigenetic modifications of MMP-2/MMP-9 genes: a novel mechanism for cardiovascular diseases.
- DNA methyltransferase expression in the human endometrium: down-regulation by progesterone and estrogen.
- Role of epigenetic effectors in maintenance of the long-term persistent bystander effect in spleen in vivo.
- Up-regulation of DNA-methyltransferase 3A expression is associated with hypomethylation of intron 25 in human testicular germ cell tumors.
- Effect of long-term tamoxifen exposure on genotoxic and epigenetic changes in rat liver: implications for tamoxifen-induced hepatocarcinogenesis.
- Irradiation induces DNA damage and modulates epigenetic effectors in distant bystander tissue in vivo.
- Age-related changes in Usp9x protein expression and DNA methylation in mouse brain.
- Fractionated low-dose radiation exposure leads to accumulation of DNA damage and profound alterations in DNA and histone methylation in the murine thymus.
- Sex- and tissue-specific expression of maintenance and de novo DNA methyltransferases upon low dose X-irradiation in mice.